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1 A Forth-based hybrid neuron for neural nets

Paul Frenger

March 1991 **Proceedings of the second and third annual workshops on Forth**

Full text available:  pdf(463.78 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)



2 Neural network simulation on shared-memory vector multiprocessors

C.-J. Wang, C.-H. Wu, S. Sivasindaram

August 1989 **Proceedings of the 1989 ACM/IEEE conference on Supercomputing**

Full text available:  pdf(620.97 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)



We simulate three neural networks on a vector multiprocessor. The training time can be reduced significantly especially when the training data size is large. These three neural networks are: 1) the feedforward network, 2) the recurrent network and 3) the Hopfield network. The training algorithms are programmed in such a way to best utilize 1) the inherent parallelism in neural computing, and 2) the vector and concurrent operations available on the parallel machine. To prove the correctness ...

3 A neural network design for circuit partitioning

J.-S. Yih, P. Mazumder

June 1989 **Proceedings of the 26th ACM/IEEE conference on Design automation**

Full text available:  pdf(737.40 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)



This paper proposes a neural network model for circuit bipartitioning. The massive parallelism of neural nets has been successfully exploited to balance the partitions of a circuit and to reduce the external wiring between the partitions. The experimental results obtained by neural nets are found to be comparable with that achieved by Fiduccia and Mattheyses algorithm.

4 An intelligent neural network programming system (NNPS)

Tao Li, XiaoJie Liu

March 2000 **ACM SIGPLAN Notices**, Volume 35 Issue 3

Full text available:  pdf(967.78 KB) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)



A neural network programming system based on parallel neural information processing has been presented. With the neural network programming system built upon a 100M local

computer network, the system has thus provided users high speed, general purpose and large scale neural network application development platforms.

Keywords: neural networks, programming language, programming system

5 Constructing deterministic finite-state automata in recurrent neural networks

Christian W. Omlin, C. Lee Giles

November 1996 **Journal of the ACM (JACM)**, Volume 43 Issue 6

Full text available:  pdf(646.04 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Recurrent neural networks that are trained to behave like deterministic finite-state automata (DFAs) can show deteriorating performance when tested on long strings. This deteriorating performance can be attributed to the instability of the internal representation of the learned DFA states. The use of a sigmoidal discriminant function together with the recurrent structure contribute to this instability. We prove that a simple algorithm can construct second-o ...

Keywords: automata, connectionism, knowledge encoding, neural networks, nonlinear dynamics, recurrent neural networks, rules, stability

6 Continuous learning: a design methodology for fault-tolerant neural networks

Vincenzo Piuri

June 1990 **Proceedings of the third international conference on Industrial and engineering applications of artificial intelligence and expert systems - Volume 2**

Full text available:  pdf(1.36 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Fault tolerance in artificial neural networks is an important feature, in particular when the application is critical or when maintenance is difficult. This paper presents a general design methodology for designing fault-tolerant architectures, starting from the behavioral description of the nominal network and from the nominal algorithm. The behavioral level is considered to detect errors due to hardware faults, while system survival is guaranteed by the reactivation of learning mechanisms ...

7 Multiprocessor simulation of neural networks with NERV

R. Manner, R. Horner, R. Hauser, A. Gentner

August 1989 **Proceedings of the 1989 ACM/IEEE conference on Supercomputing**

Full text available:  pdf(1.08 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

A general-purpose simulation system for neural networks is computationally very demanding. This paper presents some estimations of the computing power required, the necessary interconnection bandwidth, and the requisite memory size. Next, the hardware architecture of the NERV multiprocessor system is derived that fulfills these requirements. Up to 320 processors 68020 are used in a single VME crate together with a Macintosh II as a host computer. This set-up provides a computing power of 13 ...

8 Technical Correspondence: A neural net compiler system for hierarchical organization

Rajeev Kumar

February 2001 **ACM SIGPLAN Notices**, Volume 36 Issue 2

Full text available:  pdf(954.76 KB)

Additional Information: [full citation](#), [abstract](#), [references](#)

We present a language framework for handling arbitrarily complex neural computations. The software architecture - which we call an **Artificial Neural Network Compiler** for

Hierarchical ORganization (ANCHOR) - facilitates network hierarchy and simpler sub-mappings. We define a **Net Definition Language (NDL)** which is implemented in object-oriented programming paradigm; a trained network is decompiled bac ...

Keywords: compiler-decompiler, hierarchical networks, neural net definitions, neural programming language, superneuron

9 Performance evaluation of a partial retraining scheme for defective multi-layer neural networks

Kunihiro Yamamori, Toru Abe, Susumu Horiguchi

January 2001 **Australian Computer Science Communications , Proceedings of the 6th Australasian conference on Computer systems architecture**, Volume 23 Issue 4

Full text available:  pdf(721.68 KB)

Additional Information: [full citation](#), [abstract](#), [references](#)



This paper addresses an efficient stuck-defect compensation scheme for multi-layer artificial neural networks implemented in hardware devices. To compensate for stuck defects, we have proposed a two-stage partial retraining scheme that adjusts weights belonging to a neuron affected by defects based on back-propagation(BP) algorithm between two layers. For input neurons, the partial retraining scheme is applied two times; first-stage between the input layer and the hidden layer, second-stage betw ...

10 Neural networks in APL

Manuel Alfonseca

May 1990 **ACM SIGAPL APL Quote Quad , Conference proceedings on APL 90: for the future**, Volume 20 Issue 4

Full text available:  pdf(395.72 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Neural networks are fairly straightforward to program in a matrix oriented language such as APL. The only general improvement that would benefit them would be the implementation of sparse matrices. Small networks can be trained quite easily using the standard procedures (back propagation, etc).

11 A simulation of final stop consonants in speech perception using the bicameral neural network model

Michael C. Stinson, Dan Foster

April 1990 **ACM SIGSIM Simulation Digest , Proceedings of the 23rd annual symposium on Simulation**, Volume 20 Issue 4

Full text available:  pdf(1.03 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper demonstrates the integration of contextual information in a neural network for speech perception. Neural networks have been unable to integrate such information successfully because they cannot implement conditional rule structures. The Bicameral neural network employs an asynchronous controller which allows conditional rules to choose neurons for update rather than updating them randomly. The Bicameral model is applied to the perception of word-final plosives, an ongoing problem ...

12 A FPGA-based implementation of a fault-tolerant neural architecture for photon identification

M. Alderighi, E. L. Gummati, V. Piuri, G. R. Sechi

February 1997 **Proceedings of the 1997 ACM fifth international symposium on Field-programmable gate arrays**

Full text available:  pdf(965.46 KB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**13 Learning of depth two neural networks with constant fan-in at the hidden nodes
(extended abstract)**

Peter Auer, Stephen Kwek, Wolfgang Maass, Manfred K. Warmuth

January 1996 **Proceedings of the ninth annual conference on Computational learning theory**

Full text available: [pdf\(1.14 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)



14 Using a neural network to predict student responses

Susan Mengel, William Lively

March 1992 **Proceedings of the 1992 ACM/SIGAPP symposium on Applied computing: technological challenges of the 1990's**

Full text available: [pdf\(911.42 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)



15 Solutions to the module orientation and rotation problems by neural computation networks

R. Libeskind-Hadas, C. L. Liu

June 1989 **Proceedings of the 26th ACM/IEEE conference on Design automation**

Full text available: [pdf\(812.85 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)



In this paper we study two strategies for modifying a given placement of modules in order to improve the quality of the routing results in the next stage of design. We assume that the modules have already been placed. The first strategy seeks to minimize the total wire length by flipping each module about its vertical and/or horizontal axes of symmetry. The second strategy seeks to minimize the total wire length by rotating each module by a multiple of 90 degrees. We introduce a new algorit ...

16 A study of the applicability of hopfield decision neural nets to VLSI CAD

M. L. Yu

June 1989 **Proceedings of the 26th ACM/IEEE conference on Design automation**

Full text available: [pdf\(778.73 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)



Hopfield decision neural nets have been claimed to be good for solving a class of optimization problems such as the traveling salesman's problem. A study was undertaken to determine if these techniques were applicable to the many optimization problems that occur in VLSI circuit design and layout. Module placement was chosen as a representative problem. It was observed that the convergence process closely resembles that of greedy hill climbing algorithms. Apart from the known problems of lon ...

17 Efficient simulation of finite automata by neural nets

Noga Alon, A. K. Dewdney, Teunis J. Ott

April 1991 **Journal of the ACM (JACM)**, Volume 38 Issue 2

Full text available: [pdf\(1.20 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)



Let $K(m)$ denote the smallest number with the property that every m -state finite automaton can be built as a neural net using $K(m)$ or fewer neurons. A counting argument shows that $K(m)$ is at least $\Omega(m \log m)^{1/3}$, and a construction shows that $K(m)$ is at most $O(m^2)$.

Keywords: Mealy machines

18 Optimization of a digital neuron design

F. Kampf, P. Koch, K. Roy, M. Sullivan, Z. Delalic, S. DasGupta

April 1990 **ACM SIGSIM Simulation Digest , Proceedings of the 23rd annual symposium on Simulation**, Volume 20 Issue 4Full text available: [pdf\(587.45 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Artificial neural network models, composed of many non-linear processing elements operating in parallel, have been extensively simulated in software. The real estate required for neurons and their interconnections has been the major hindrance for hardware implementation. Therefore, a reduction in neuron size is highly advantageous. A digital neuron design consisting of an arithmetic logic unit (ALU) has been implemented to conform to the hard-limiting threshold function. Studies on reducing ...

19 Some Dichotomy Theorems for Neural Learning Problems

Michael Schmitt

August 2004 **The Journal of Machine Learning Research**, Volume 5Full text available: [pdf\(189.45 KB\)](#) Additional Information: [full citation](#), [abstract](#)

The computational complexity of learning from binary examples is investigated for linear threshold neurons. We introduce combinatorial measures that create classes of infinitely many learning problems with sample restrictions. We analyze how the complexity of these problems depends on the values for the measures. The results are established as dichotomy theorems showing that each problem is either NP-complete or solvable in polynomial time. In particular, we consider consistency and maximum cons ...

20 Neural networks from idea to implementation

Kenneth M. Lane, Richard D. Neidinger

March 1995 **ACM SIGAPL APL Quote Quad**, Volume 25 Issue 3Full text available: [pdf\(595.41 KB\)](#) Additional Information: [full citation](#), [index terms](#)

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21 Tree-structured neural decoding

Christian d'Avignon, Donald Geman

December 2003 **The Journal of Machine Learning Research**, Volume 4

Full text available: [pdf\(218.59 KB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

We propose adaptive testing as a general mechanism for extracting information about stimuli from spike trains. Each test or question corresponds to choosing a neuron and a time interval and checking for a given number of spikes. No assumptions are made about the distribution of spikes or any other aspect of neural encoding. The chosen questions are those which most reduce the uncertainty about the stimulus, as measured by entropy and estimated from stimulus-response data. Our experiments are bas ...

22 Pattern recognition with a pulsed neural network

Judith Dayhoff

May 1991 **Proceedings of the conference on Analysis of neural network applications**

Full text available: [pdf\(1.16 MB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)

23 The use of the electrical simulator SPICE for behavioral simulation of artificial neural networks

Vincenzo Piuri

April 1991 **Proceedings of the 24th annual symposium on Simulation**

Full text available: [pdf\(1.27 MB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)

24 Hopfield networks, neural data structures and the nine flies problem: neural network programming projects for undergraduates

John G. Keating

December 1993 **ACM SIGCSE Bulletin**, Volume 25 Issue 4

Full text available: [pdf\(663.60 KB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

This paper describes two neural network programming projects suitable for undergraduate students who have already completed introductory courses in Programming and Data Structures. It briefly outlines the structure and operation of Hopfield Networks from a data structure stand-point and demonstrates how these type of neural networks may be used to

solve interesting problems like Perelman's Nine Flies Problem. Although the Hopfield model is well defined mathematically, students do not have to be ...

25 On the complexity of learning for a spiking neuron (extended abstract)

Wolfgang Maass, Michael Schmitt

July 1997 **Proceedings of the tenth annual conference on Computational learning theory**

Full text available:  pdf(1.32 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)



26 A VLSI asynchronous cellular architecture for neural computing: functional definition and performance evaluation

Bernard Faure, Guy Mazare

June 1990 **Proceedings of the third international conference on Industrial and engineering applications of artificial intelligence and expert systems - Volume 2**

Full text available:  pdf(1.41 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)



Neural networks have two interesting features: robustness and fault tolerance on the one hand, massive parallelism on the other hand. The best way to keep those features and take into account the underlying massive parallelism is to map the neural network over a massively parallel architecture. However, a communication problem remains since the neurons are highly interconnected. A communication system, based on message transfers and without need for allocating a physical link for each conne ...

27 Position papers: Artificial neural networks: a science in trouble

Asim Roy

January 2000 **ACM SIGKDD Explorations Newsletter**, Volume 1 Issue 2

Full text available:  pdf(646.93 KB) Additional Information: [full citation](#), [abstract](#), [references](#)



This article points out some very serious misconceptions about the brain in connectionism and artificial neural networks. Some of the connectionist ideas have been shown to have logical flaws, while others are inconsistent with some commonly observed human learning processes and behavior. For example, the connectionist ideas have absolutely no provision for learning from stored information, something that humans do all the time. The article also argues that there is definitely a need for some ne ...

Keywords: artificial neural networks, automated learning, brain-like learning, connectionism, data mining, intelligent systems

28 Ariel: a scalable multiprocessor for the simulation of neural networks

Gary Frazier

March 1990 **ACM SIGARCH Computer Architecture News**, Volume 18 Issue 1

Full text available:  pdf(729.87 KB) Additional Information: [full citation](#), [abstract](#), [index terms](#)



Ariel is a multiprocessor architecture that we are developing to simulate neural networks and other models of distributed computation. The design is based upon a hierarchical network of coarse-grained processing modules. The module hardware uses fast digital signal processors and very large semiconductor memories to provide the throughput and storage capacity required to simulate large networks. Our objective is to provide a system that can be scaled up to simulate neural networks compose ...

29 VC dimension of an integrate-and-fire neuron model

Anthony M. Zador, Barak A. Pearlmutter



January 1996 **Proceedings of the ninth annual conference on Computational learning theory**

Full text available:  pdf(823.13 KB) Additional Information: [full citation](#), [references](#), [index terms](#)



30 Neural network learning: a new programming paradigm?

Jorge Barreto

September 1990 **Proceedings of the 1990 ACM SIGBDP conference on Trends and directions in expert systems**

Full text available:  pdf(1.20 MB) Additional Information: [full citation](#), [references](#), [index terms](#)



31 Residual speech signal compression: an experiment in the practical application of neural network technology

Lorien Pratt, Kathleen D. Cebulka, Peter Clitherow

June 1990 **Proceedings of the third international conference on Industrial and engineering applications of artificial intelligence and expert systems - Volume 2**

Full text available:  pdf(1.33 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Neural networks are a popular area of research today. However, neural network algorithms have only recently proven valuable to application problems. This paper seeks to aid in the process of transferring neural network technology from research to a development environment by describing our experience in applying this technology. The application studied here is Speaker Identity Verification (SIV), which is the task of verifying a speaker's identity by comparing the speaker's voice ...



32 A discrete-time neural network multitarget tracking data association algorithm

Oluseyi Olurotimi

May 1991 **Proceedings of the conference on Analysis of neural network applications**

Full text available:  pdf(862.55 KB) Additional Information: [full citation](#), [references](#), [index terms](#)

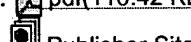


33 High speed neural network chip for trigger purposes in high energy physics

W. Eppler, T. Fischer, H. Gemmeke, A. Menchikov

February 1998 **Proceedings of the conference on Design, automation and test in Europe**

Full text available:  pdf(116.42 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)



A novel neural chip SAND (Simple Applicable Neural Device) is described. It is highly usable for hardware triggers in particle physics. The chip is optimized for a high input data rate (50 MHz, 16 bit data) at a very low cost basis. The performance of a single SAND chip is 200 MOPS due to four parallel 16 bit multipliers and 40 bit adders working in one clock cycle. The chip is able to implement feedforward neural networks with a maximum of 512 input neurons and three hidden layers. Kohonen feat ...

Keywords: VME board with neural network chip SAND, Hardware accelerator for neural networks, High energy physics : trigger, on- and off-line analysis



34 Time series forecasting using neural networks

Thomas Kolarik, Gottfried Rudorfer

August 1994 **ACM SIGAPL APL Quote Quad , Proceedings of the international**

conference on APL : the language and its applications: the language and its applications, Volume 25 Issue 1Full text available:  pdf(657.67 KB)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Artificial neural networks are suitable for many tasks in pattern recognition and machine learning. In this paper we present an APL system for forecasting univariate time series with artificial neural networks. Unlike conventional techniques for time series analysis, an artificial neural network needs little information about the time series data and can be applied to a broad range of problems. However, the problem of network "tuning" remains: parameters of the backpropagation a ...

35 Teaching a topic in cybernetics with APL: An introduction to neural net modelling 

Howard A. Peelle

September 1981 **ACM SIGAPL APL Quote Quad , Proceedings of the international conference on APL**, Volume 12 Issue 1Full text available:  pdf(370.08 KB)Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper describes a curriculum unit in which APL is used to introduce models of neural networks. It begins with a simple model for transmitting impulses among a vector of logical neurons; then a more sophisticated model is developed with thresholds, decay, and inhibition in a matrix of neurons; then a general model is offered for higher order arrays of neurons, with dynamic input and automated impulse propagation; and, finally, the APL functions are embodied in an easy-to-use simulation ...

36 Transformations and distortions tolerant recognition of numerals using neural networks 

R. P. Srivastava

April 1999 **Proceedings of the 19th annual conference on Computer Science**Full text available:  pdf(476.93 KB)Additional Information: [full citation](#), [references](#), [citations](#)**37 Neural methods for dynamic branch prediction** 

Daniel A. Jiménez, Calvin Lin

November 2002 **ACM Transactions on Computer Systems (TOCS)**, Volume 20 Issue 4Full text available:  pdf(540.67 KB)Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This article presents a new and highly accurate method for branch prediction. The key idea is to use one of the simplest possible neural methods, the perceptron, as an alternative to the commonly used two-bit counters. The source of our predictor's accuracy is its ability to use long history lengths, because the hardware resources for our method scale linearly, rather than exponentially, with the history length. We describe two versions of perceptron predictors, and we evaluate these predictors ...

Keywords: Branch prediction, neural networks**38 Optical realizations of neural network models** 

Demetri Psaltis

November 1999 **Proceedings of 1986 ACM Fall joint computer conference**Full text available:  pdf(561.37 KB)Additional Information: [full citation](#), [references](#), [index terms](#)**39 A neural network based algorithm for the scheduling problem in high-level synthesis** 

Mehrdad Nourani, Christos Papachristou, Yoshiyasu Takefuji

November 1992 **Proceedings of the conference on European design automation**

Full text available:  pdf(594.38 KB) Additional Information: [full citation](#), [references](#), [index terms](#)



40 Robust trainability of single neurons

Klaus-Uwe Höffgen, Hans Ulrich Simon

July 1992 **Proceedings of the fifth annual workshop on Computational learning theory**

Full text available:  pdf(1.22 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We investigate the problem of learning concepts by presenting labeled and randomly chosen training-examples to single neurons. It is well-known that linear halfspaces are learnable by the method of linear programming. The corresponding (Mc-Culloch-Pitts) neurons are therefore efficiently trainable to learn an unknown halfspace from examples. We want to analyze how fast the learning performance degrades when the representational power of the neuron is overstrained, i.e., if more comple ...

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Relevance scale **41 Modeling II: 3D object reconstruction and representation using neural networks** 

Lim Wen Peng, Siti Mariyam Shamsuddin

June 2004 **Proceedings of the 2nd international conference on Computer graphics and interactive techniques in Australasia and Southe East Asia**Full text available:  [pdf\(468.49 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

3D object reconstruction is frequent used in various fields such as product design, engineering, medical and artistic applications. Numerous reconstruction techniques and software were introduced and developed. However, the purpose of this paper is to fully integrate an adaptive artificial neural network (ANN) based method in reconstructing and representing 3D objects. This study explores the ability of neural networks in learning through experience when reconstructing an object by estimating it ...

Keywords: affined transformation, back propagation, multilayer feed-forward neural networks, object space, reconstruction, representation, third order polynomial

42 External and internal representations appropriate for ART neural networks 

M. Cader, D. Benachenhou, L. Medsker, H. Szu

September 1990 **Proceedings of the 1990 ACM SIGBDP conference on Trends and directions in expert systems**Full text available:  [pdf\(691.54 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)**43 Automating judgmental decisions using neural networks: a model for processing business loan applications** 

Rajeshwar Prasad Srivastava

April 1992 **Proceedings of the 1992 ACM annual conference on Communications**Full text available:  [pdf\(522.98 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper presents a neural network model that simulates a business loan officer. The network is trained by showing financial ratios, past credit ratings, and loan records of a mixed sample of defaulted and non-defaulted companies. Once it is trained, it recommends to grant or deny a loan. The model uses human judgment of an expert as well as mathematical analysis of financial ratios. It includes into consideration the relative importance of different inputs, and the degree of belief in hu ...

44 On the optimal capacity of binary neural networks: rigorous combinatorial approaches

Jeong Han Kim, James R. Roche

July 1995 **Proceedings of the eighth annual conference on Computational learning theory**Full text available:  pdf(805.24 KB) Additional Information: [full citation](#), [references](#), [index terms](#)**45 On the power of sigmoid neural networks**

Joe Kilian, Hava T. Siegelmann

August 1993 **Proceedings of the sixth annual conference on Computational learning theory**Full text available:  pdf(690.10 KB) Additional Information: [full citation](#), [references](#), [index terms](#)**46 A new cache replacement scheme based on backpropagation neural networks**

Humayun Khalid

March 1997 **ACM SIGARCH Computer Architecture News**, Volume 25 Issue 1Full text available:  pdf(572.97 KB) Additional Information: [full citation](#), [abstract](#), [index terms](#)

In this paper, we present a new neural network-based algorithm, **KORA** (*Khalid ShadOw Replacement Algorithm*), that uses backpropagation neural network (BPNN) for the purpose of guiding the line/block replacement decisions in cache. This work is a continuation of our previous research presented in [1]-[3]. The KORA algorithm attempts to approximate the replacement decisions made by the optimal scheme (OPT). The key to our algorithm is to identify and subsequently ...

Keywords: cache memory, neural networks, performance evaluation

47 Fuzzy neural fusion techniques for industrial applications

S. K. Halgamuge, M. Glesner

April 1994 **Proceedings of the 1994 ACM symposium on Applied computing**Full text available:  pdf(563.19 KB) Additional Information: [full citation](#), [references](#), [index terms](#)

Keywords: Iris classification, backpropagation, cascade systems, fuzzy step net, fuzzy-neural, rule generation

48 Neural networks: a new dimension in expert systems applications

Mohammed H. A. Tafti

September 1990 **Proceedings of the 1990 ACM SIGBDP conference on Trends and directions in expert systems**Full text available:  pdf(922.59 KB) Additional Information: [full citation](#), [references](#), [index terms](#)**49 NeuroAnimator: fast neural network emulation and control of physics-based models**

Radek Grzeszczuk, Demetri Terzopoulos, Geoffrey Hinton

July 1998 **Proceedings of the 25th annual conference on Computer graphics and interactive techniques**

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Keywords: backpropagation, dynamical systems, learning, motion control, neural networks, physics-based animation, simulation

50 A sub Bayesian nearest prototype neural network with fuzzy interpretability for diagnosis problems



Saman Halgamuge, Christoph Grimm, Manfred Glesner

February 1995 **Proceedings of the 1995 ACM symposium on Applied computing**

Full text available: [!\[\]\(9f63f5ec98cc2eddf66038fdc55c1091_img.jpg\) pdf\(508.72 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: Bayes classifier, fuzzy rules, neural networks, rule generation

51 Article abstracts with full text online: A neural net based approach to Test Oracle



K. K. Aggarwal, Yogesh Singh, A. Kaur, O. P. Sangwan

May 2004 **ACM SIGSOFT Software Engineering Notes**, Volume 29 Issue 3

Full text available: [!\[\]\(8ea5b969742211724a7ce52e1ecf90fc_img.jpg\) pdf\(285.13 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

In this paper an attempt has been made to explore the possibility of the usage of artificial neural networks as Test Oracle. The triangle classification problem has been used as a case study. Results for the usage of unsupervised artificial networks indicate that they are not suitable for this purpose. The Feed-forward back propagation neural networks are demonstrated to be suitable.

Keywords: Test Oracle, artificial neural networks, software testing

52 Neural networks and artificial intelligence



N. E. Sondak, V. K. Sondak

February 1989 **ACM SIGCSE Bulletin , Proceedings of the twentieth SIGCSE technical symposium on Computer science education**, Volume 21 Issue 1

Full text available: [!\[\]\(93c02a4c5e106c1ff858f3309b288264_img.jpg\) pdf\(483.88 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Neural networks have been called "more important than the atomic bomb" and have received a major funding commitment from DARPA. Nevertheless, it is difficult to find even a mention of neural network concepts and applications in many computer science or information systems curricula. In fact, few computer science or information systems faculty are aware of the profound implications of neurocomputing on the future of their field. This paper contends that neural networks must be a ...

53 Radiographic image compression: a neural approach



Sridhar Narayan, Edward W. Page, Gene A. Tagliarini

May 1991 **Proceedings of the conference on Analysis of neural network applications**

Full text available: [!\[\]\(0a2082a98c9eb377b3cd4e5269a66bb7_img.jpg\) pdf\(1.10 MB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)

54 A neural network for probabilistic information retrieval



K. L. Kwok

May 1989 **ACM SIGIR Forum , Proceedings of the 12th annual international ACM SIGIR conference on Research and development in information retrieval,**
Volume 23 Issue 1-2

Full text available:  pdf(1.05 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper demonstrates how a neural network may be constructed, together with learning algorithms and modes of operation, that will provide retrieval effectiveness similar to that of the probabilistic indexing and retrieval model based on single terms as document components.

55 Early bankruptcy detection using neural networks 

Gottfried Rudorfer

June 1995 **ACM SIGAPL APL Quote Quad , Proceedings of the international conference on Applied programming languages**, Volume 25 Issue 4

Full text available:  pdf(810.07 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In 1993, Austria had the highest number of bankruptcies since 1945. The total liabilities came to approximately US\$3 billion. Powerful tools for the early detection of company risks are very important to avoid high economic losses. Artificial neural networks (ANN) are suitable for many tasks in pattern recognition and machine learning. In this paper we present an ANN for early detection of company failures using balance sheet ratios. The neural network has been successfully ...

Keywords: APL, artificial neural networks, backpropagation, balance sheet ratios, bankruptcy, discriminant analysis

56 A concurrent neural network algorithm for the traveling salesman problem 

N. Toomarian

January 1989 **Proceedings of the third conference on Hypercube concurrent computers and applications - Volume 2**

Full text available:  pdf(597.45 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A binary neuromorphic data structure is used to encode the N — city Traveling Salesman Problem (TSP). In this representation the computational complexity, in terms of number of neurons, is reduced from Hopfield and Tank's $\Theta(N^2)$ to $\Theta(N \log_2 N)$. A continuous synchronous neural network algorithm in conjunction with the LaGrange multiplier, is used to solve the problem. The algorithm has been implemented on the NCUBE hypercube multiprocess ...

57 Fuzzy RuleNet: an artificial neural network model for fuzzy classification 

Nadine Tschichold-Gürman

April 1994 **Proceedings of the 1994 ACM symposium on Applied computing**

Full text available:  pdf(571.46 KB) Additional Information: [full citation](#), [references](#), [index terms](#)

58 A comparative study of neural network algorithms applied to optical character recognition 

P. Patrick van der Smagt

June 1990 **Proceedings of the third international conference on Industrial and engineering applications of artificial intelligence and expert systems - Volume 2**

Full text available:  pdf(1.15 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Three simple general purpose networks are tested for pattern classification on an optical character recognition problem. The feed-forward (multi-layer perceptron) network, the Hopfield network and a competitive learning network are compared. The input patterns are obtained by optically scanning images of printed digits and uppercase letters. The resulting data is used as input for the networks with two-state input nodes; for others, features are extracted by template matching and pi ...

59 [Neural nets and alphabets: introducing students to neural networks](#)



K. G. Schweller, A. L. Plagman

September 1989 **ACM SIGCSE Bulletin**, Volume 21 Issue 3

Full text available: [pdf\(544.09 KB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

Three student projects involving neural networks are described. The projects include recognizing handwritten letters of the alphabet, determining the orientation of an imaged line, and recognizing particular rooms of a house based on samples of furniture found in the rooms. All projects were run on a back propagation neural network program implemented in Modula-2. A description of the program is presented and a sample module for simulating the behavior of an OR gate is included as an appendix. T ...

60 [Knowledge discovery based on neural networks](#)



LiMin Fu

November 1999 **Communications of the ACM**, Volume 42 Issue 11

Full text available: [pdf\(89.84 KB\)](#) [html\(20.16 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)

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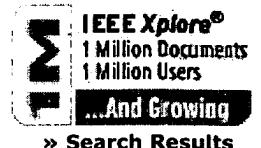
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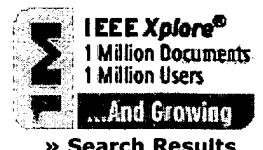
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6 Small-scaled neuro-hardware using probabilistically-coded pulse neurons with on-chip learning

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8 Cultured neurons coupled to microelectrode arrays: circuit models, simulations and experimental data

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11 Analog integrated circuits for the Lotka-Volterra competitive neural networks*Asai, T.; Ohtani, M.; Yonezu, H.;*

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[\[Abstract\]](#) [\[PDF Full-Text \(932 KB\)\]](#) [IEEE JNL](#)**12 Deterministic annealing techniques for a discrete-time neural-network updating in a block-sequential mode***Shiratani, F.; Yamamoto, K.;*

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[\[Abstract\]](#) [\[PDF Full-Text \(360 KB\)\]](#) [IEEE JNL](#)**13 Simulations of the behavior of synaptically driven neurons via time-invariant circuit models***Storace, M.; Bove, M.; Grattarola, M.; Parodi, M.;*

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[\[Abstract\]](#) [\[PDF Full-Text \(180 KB\)\]](#) [IEEE JNL](#)**14 Modeling the neuron-microtransducer junction: from extracellular to patch recording***Grattarola, M.; Martinoia, S.;*

Biomedical Engineering, IEEE Transactions on , Volume: 40 , Issue: 1 , Jan. 1993

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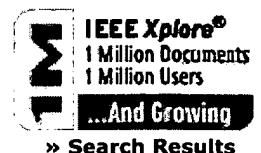
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16 Silicon spike-based synaptic array and address-event transceiver

Vogelstein, R.J.; Mallik, U.; Cauwenberghs, G.;
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Communications, Circuits and Systems and West Sino Expositions, IEEE 2002
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Zhang, C.N.; Ming Zhao; Meng Wang;
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Miftakhov, R.N.; Wingate, D.L.;
Neural Networks, 1994. IEEE World Congress on Computational Intelligence., 1994
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26 An impulse realization of short-term-memory dynamics

Meador, J.; Cole, C.; Wu, A.;

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Szlavik, R.B.;

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31 Novel heterostructure device for electronic pulse-mode neural circuits

Song, C.; Roenker, K.P.;
Neural Networks, IEEE Transactions on, Volume: 5 , Issue: 4 , July 1994
 Pages:663 - 665

[\[Abstract\]](#) [\[PDF Full-Text \(224 KB\)\]](#) **IEEE JNL**
32 An emulator for biologically-inspired neural networks

Richert, P.; Hosticka, B.J.; Kesper, M.; Scholles, M.; Schwarz, M.;
Neural Networks, 1993. IJCNN '93-Nagoya. Proceedings of 1993 International Joint Conference on, Volume: 1 , 25-29 Oct. 1993
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33 Analog circuits emulating biological neurons in real-time experiments

Laflaquiere, A.; Le Masson, S.; Dupeyron, D.; Le Masson, G.;
Engineering in Medicine and Biology society, 1997. Proceedings of the 19th Annual International Conference of the IEEE , Volume: 5 , 30 Oct.-2 Nov. 1997
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34 Neuromorphic CMOS circuitry for active bidirectional delay lines

Yang, W.;
Circuits and Systems, 1996. ISCAS '96., 'Connecting the World'., 1996 IEEE International Symposium on , Volume: 3 , 12-15 May 1996
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35 An evolutionary view of intelligence

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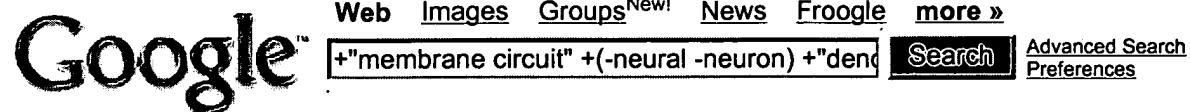
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